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IN THIS ISSUE

FOOD PRODUCTION AND CONSUMPTION IN THE MIDDLE EAST

RECENT AGRICULTURAL-POLICY DEVELOPMENTS IN PANAMA

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CONTENTS

	Page
FOOD PRODUCTION AND CONSUMPTION IN THE MIDDLE EAST	243
Food production and consumption	247
Interpretation	249
Dietary habits	251
RECENT AGRICULTURAL-POLICY DEVELOPMENTS IN PANAMA	256
Panama's food problem	256
Food crops	257
Dependence upon United States	259
Livestock	259
Export crops	259
The Government's program for increased production	261
Reduction of tariff duties	262
Price control.	263
Other plans	263
Transportation and marketing facilities	263
Results of program	264

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FOOD PRODUCTION AND CONSUMPTION IN THE MIDDLE EAST

By Afif I. Tannous*

Since the advent of the war, attention of the United Nations and the local governments concerned has been directed, as never before, toward the solution of the serious problem of providing an adequate food supply for the Middle East. An analysis of the situation reveals several significant features and factors that have to be taken into consideration if an effective improvement is to be made. In this connection, the following suggestions seem pertinent: Continuation of the fundamental change in the national policy, from cash-crop to food-crop production, which already has taken place under war demands; provisions for transportation facilities within each country and between the countries of the region; encouragement of factory and home canning; development of the dairy industry wherever irrigation permits the growing of feed; evolution and possible encouragement of certain local food practices, which may prove to be economical and healthy, although unorthodox; and inauguration of popular campaigns with a view to educating the public regarding the value of a proper diet.

The region under consideration consists of five political entities - Egypt, Palestine, Trans-Jordan, Syria-Lebanon, and Iraq. These countries, however, form one potential economic and cultural unit. No single one of them is self-sufficient agriculturally, whereas together they are capable of a high degree of self-sufficiency. All share in the main features of a common culture base, predominantly Arab, with minor local variations. Islam is the predominant religion, being embraced by 80 to 90 percent of the population. Arabic is the native tongue, with more or less different local dialects, but with one literary form. The main cultural values of family solidarity, hospitality, leisurely attitude toward life, reverence of traditions, emphasis upon the personal touch in human relations, and a high degree of group consciousness are almost equally shared by the Egyptians, the Iraqis, the Syrians, and other peoples of the region.

In the field of agriculture a striking similarity also prevails. In the first place, we observe that agriculture, as practiced by these people, is an all-embracing way of life. They are born into it, molded according to its long-established pattern, and expect to follow in the footsteps of their ancestors, unless forced by extreme circumstances to make a departure. The Lebanese, for example, did not take to emigration from their agricultural villages until 1870-1880, and only after population pressure became unbearable and after the scanty soil on the rugged mountainsides was exploited to the limit through extensive terracing. The Egyptians suffer from a similar high-population pressure and a consequent low standard of living, yet they tenaciously adhere to their villages and agricultural way of life. In the second

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TABLE 1.-Food consumption in Egypt, pre-war average 1934-37¹

ITEM	GROSS PRODUCTION	NET IMPORTS (+) OR NET EXPORTS (-)	SUPPLY AVAILABLE	ESTIMATED PORTION USED FOR FOOD ²	APPARENT PER CAPITA CONSUMPTION AS FOOD		ESTIMATED LOCAL RATE OF EXTRACTION
					GROSS	NET	
	1,000 short tons	1,000 short tons	1,000 short tons	1,000 short tons	Pounds	Pounds	Percent
Wheat	1,305.1	+7.7	1,312.8	1,185.0	148.1	118.6	80
Maize	1,781.3	+3.3	1,784.6	1,551.0	194.0	174.6	90
Rice	663.6	-159.8	503.8	485.0	60.6	40.6	67
Barley	248.0	-7.7	240.3	22.0	2.8	2.2	75
Ourra	469.6	-6.6	463.0	367.0	45.8	41.2	90
Total cereals	4,467.6	-163.1	4,304.5	3,610.0	451.3	³ 377.2	
Potatoes	46.3	+18.7	65.0	60.6	7.5	6.6	90
Beans	319.7	+3.3	323.0	286.7	35.9	35.9	100
Lentils	57.5	-.6	56.9	52.0	6.4	6.4	100
Fenugreek	51.8	-	51.8	46.0	5.7	5.7	100
Pulse, other	14.3	-	14.3	12.6	1.6	1.6	100
Total pulse	443.3	+2.7	446.0	397.3	49.6	49.6	
Onions	256.8	-143.3	113.5	113.5	14.1	14.1	100
Vegetables, other	440.9	-	440.9	440.9	55.1	49.6	90
Total vegetables	697.7	-143.3	554.4	554.4	69.2	63.7	
Citrus fruit	230.4	-5.5	224.9	224.9	28.0	22.5	80
Grapes	25.4	+14.3	39.7	39.7	4.8	4.4	90
Melons	220.5	-	220.5	220.5	27.6	20.7	75
Fruit, other	198.4	-37.5	160.9	160.9	20.1	16.1	80
Total fruit	674.7	-28.7	646.0	646.0	80.5	63.7	
Nuts	16.5	+10.1	26.6	25.0	3.1	1.5	50
Oil, cottonseed	55.1	-11.0	44.1	33.0	4.4	4.4	100
Oil, other6	+19.7	20.3	15.0	1.8	1.8	100
Total vegetable oil	55.7	+8.7	64.4	48.0	6.2	6.2	
Beef and veal	114.6	-	114.6	114.6	14.3	13.0	90
Mutton and lamb	29.8	-	29.8	29.8	3.7	3.3	90
Goat and kid	16.5	-	16.5	16.5	2.0	1.8	90
Total meat ⁴	160.9	-	160.9	160.9	20.0	18.1	
Poultry	9.9	-	9.9	9.9	1.3	1.1	90
Fish	-	-	-	-	-	-	-
Eggs	39.7	-4.4	35.3	35.3	4.4	4.0	90
Milk ⁵	523.6	+50.7	574.3	574.3	71.9	71.9	100
Sugar	159.0	-24.6	134.4	134.4	16.8	16.8	100
Tea	-	+7.7	7.7	7.7	.9	.9	100
Coffee	-	+8.2	8.2	8.2	1.1	1.1	100

¹ In a few cases, when figures for all 4 years were not available, a less than 4-year average was used, but within the period 1934-37.

² About 10 percent of maize, 90 percent of barley, and 20 percent of durra are fed to livestock, and about 25 percent of vegetable oil is used for industrial purposes. Allowance is also made for seed.

³ In terms of flour.

⁴ Includes fat and offals.

⁵ Includes all dairy products in terms of milk.

Compiled from official sources. Population: Total, 16,000,000; rural, 12,000,000; urban, 4,000,000.

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place, one can readily observe that, aside from a few scattered exceptions that emphasize the general rule by glaring contrast, agriculture in this part of the world is still undertaken by means of antiquated methods. The Biblical team of oxen and wooden plow, the hand sickle, wheat threshed by animals walking on it, and manure used for fuel are predominantly in evidence. Finally, the prevailing system of land tenure, which is the foundation of agricultural production, is a heritage from the remote past and has given rise to a number of serious problems.<sup>1</sup>

There are several different categories of land, most of which do not define clearly the rights of the owner. In several localities a pseudocommunal form of land-ownership prevails, under the influence of which individual initiative for agricultural improvement is reduced to a minimum. With the exception of Lebanon, where ownership of the land in "fee simple" is the rule, the majority of the *fellahin* work on the land as tenants of one type or another. In Egypt, for example, 7 percent of the owners held in 1930 not less than 70 percent of the agricultural land.<sup>2</sup> In Iraq, most of the land is owned by tribal sheiks and absentee landlords.

The total population of the region amounts to about 25 million people. Egypt leads with over 16 million; Iraq follows with 4 million; Syria and Lebanon together have 3 million; and Palestine and Trans-Jordan, 2 million. Concentration per unit of cultivated area is extremely high in Egypt, about 1,500 persons to the square mile; in Lebanon the average is about 1,200, whereas it is only 70 in Trans-Jordan and 80 in Iraq. Aside from this peculiar pattern of concentration, a distinctive feature of the population is that over 75 percent are rural and dependent upon agriculture for a living.

Most of the rural inhabitants are settled, living in compact villages. The *fellahin* and their animals leave the village in the morning and go to work in the surrounding fields. No isolated farmsteads exist between the villages. In addition to settled villagers, the rural population consists of nomadic and seminomadic tribes. The former are on the move most of the year, following the seasons with their flocks, whereas the latter settle down for a short time during the planting and harvesting seasons. This transition from the one extreme of pure nomadism to the other extreme of permanent agricultural settlement, with mobility at a low minimum, has been taking place in that part of the world for thousands of years. At present one can readily observe such transition in action by moving inland a short distance from the narrow coastal plains, fertile river valleys, or oases, toward the interior plateaus and deserts. Another population aspect, which has a direct bearing upon the subject of this article, is that both the birth rate and the death rate are very high.

With the strong emphasis of the culture upon family life and with the predominant religion of Islam permitting polygyny, practically every woman is certain of getting married at an early age, between 15 and 20 years in the rural areas, and having a large number of children. Consequently, the birth rate ranges from 30 to 45 per 1,000 people, which is more than double the rate in the United States. At the same time the death rate is between 20 and 28, which again is much higher than the United States rate and results mainly from the extremely high infant-mortality rate of 150 to 200 per 1,000 live births. The net result, however, has been an increase in population, which may be expected to become more rapid with the application of modern medical knowledge and sanitation.

<sup>1</sup> For a detailed discussion of this subject, see TANNOUS, AFIF I. LAND TENURE IN THE MIDDLE EAST. *Foreign Agr.* 7: 171-177, illus. 1943.

<sup>2</sup> CLELAND, WILLIAM WENDELL. THE POPULATION PROBLEM IN EGYPT. 134 pp. illus. Lancaster, Pa. 1936. (Thesis, Ph. D., Columbia Univ.) See p. 94.

TABLE 2.—Food consumption in Palestine, pre-war average 1934-38<sup>1</sup>

| ITEM                              | GROSS PRODUCTION | NET IMPORTS (+)<br>OR<br>NET EXPORTS (-) | SUPPLY AVAILABLE | ESTIMATED PORTION USED FOR FOOD <sup>2</sup> | APPARENT PER CAPITA CONSUMPTION AS FOOD |                    | ESTIMATED LOCAL RATE OF EXTRACTION |
|-----------------------------------|------------------|------------------------------------------|------------------|----------------------------------------------|-----------------------------------------|--------------------|------------------------------------|
|                                   |                  |                                          |                  |                                              | GROSS                                   | NET                |                                    |
|                                   | 1,000 short tons | 1,000 short tons                         | 1,000 short tons | 1,000 short tons                             | Pounds                                  | Pounds             | Percent                            |
| Wheat . . . . .                   | 97.0             | +75.0                                    | 172.0            | 148.8                                        | 198.4                                   | 158.7              | 80                                 |
| Barley . . . . .                  | 74.0             | +16.5                                    | 90.5             | 19.8                                         | 26.5                                    | 19.8               | 75                                 |
| Maize . . . . .                   | 7.7              | +5.5                                     | 13.2             | 9.9                                          | 13.2                                    | 11.9               | 90                                 |
| Durra . . . . .                   | 51.8             | —                                        | 51.8             | 24.8                                         | 33.1                                    | 29.8               | 90                                 |
| Rice . . . . .                    | —                | +17.6                                    | 17.6             | 17.6                                         | 23.6                                    | 23.6               | 100                                |
| Rye . . . . .                     | —                | +7.7                                     | 7.7              | 7.7                                          | 10.1                                    | 10.2               | 100                                |
| Total cereal . . . . .            | 230.5            | +122.3                                   | 352.8            | 228.6                                        | 304.9                                   | <sup>3</sup> 254.0 |                                    |
| Potatoes . . . . .                | 6.6              | +17.6                                    | 24.2             | 23.1                                         | 30.9                                    | 27.8               | 90                                 |
| Lentils . . . . .                 | 3.3              | +1.1                                     | 4.4              | 3.3                                          | 4.4                                     | 4.4                | 100                                |
| Pulse, other . . . . .            | 2.2              | +1.1                                     | 3.3              | 2.2                                          | 3.1                                     | 3.1                | 100                                |
| Total pulse . . . . .             | 5.5              | +2.2                                     | 7.7              | 5.5                                          | 7.5                                     | 7.5                |                                    |
| Onions . . . . .                  | —                | +6.6                                     | 6.6              | 6.6                                          | 8.8                                     | 8.8                | 100                                |
| Vegetables, other . . . . .       | 82.7             | +11.0                                    | 93.7             | 93.7                                         | 125.0                                   | 112.4              | 90                                 |
| Total Vegetables . . . . .        | 82.7             | +17.6                                    | 100.3            | 100.3                                        | 133.8                                   | 121.2              |                                    |
| Citrus fruit . . . . .            | 533.5            | -426.6                                   | 106.9            | 106.9                                        | 142.4                                   | 113.8              | 80                                 |
| Grapes . . . . .                  | 44.1             | +4.4                                     | 48.5             | 48.5                                         | 64.6                                    | 58.2               | 90                                 |
| Melons . . . . .                  | 90.4             | -9.9                                     | 80.5             | 80.5                                         | 107.4                                   | 80.5               | 75                                 |
| Figs . . . . .                    | 16.5             | —                                        | 16.5             | 16.5                                         | 22.1                                    | 22.0               | 100                                |
| Fruit, other . . . . .            | 14.3             | +14.3                                    | 28.6             | 28.6                                         | 38.1                                    | 30.4               | 80                                 |
| Total fruit . . . . .             | 698.8            | -417.8                                   | 281.0            | 281.0                                        | 374.6                                   | 304.9              |                                    |
| Nuts . . . . .                    | 4.4              | +14.3                                    | 18.7             | 18.7                                         | 24.9                                    | 12.3               | 50                                 |
| Oil, olive . . . . .              | 6.6              | +0.6                                     | 7.2              | 5.1                                          | 6.8                                     | 6.8                | 100                                |
| Oil, other . . . . .              | 1.1              | +0.2                                     | 1.3              | 0.9                                          | 1.1                                     | 1.1                | 100                                |
| Total veg. oil . . . . .          | 7.7              | +0.8                                     | 8.5              | 6.0                                          | 7.9                                     | 7.9                |                                    |
| Beef and veal . . . . .           | 5.1              | +2.2                                     | 7.3              | 7.3                                          | 9.7                                     | 8.8                | 90                                 |
| Mutton and lamb . . . . .         | 2.4              | +5.1                                     | 7.5              | 7.5                                          | 9.9                                     | 8.8                | 90                                 |
| Goat and kid . . . . .            | 1.3              | +1.3                                     | 2.6              | 2.6                                          | 3.5                                     | 3.3                | 90                                 |
| Total meat <sup>4</sup> . . . . . | 8.8              | +8.6                                     | 17.4             | 17.4                                         | 23.1                                    | 20.9               |                                    |
| Poultry . . . . .                 | 0.6              | +3.3                                     | 3.9              | 3.9                                          | 5.1                                     | 4.6                | 90                                 |
| Fish . . . . .                    | 1.7              | +5.5                                     | 7.2              | 7.2                                          | 9.5                                     | 8.4                | 90                                 |
| Eggs . . . . .                    | 6.6              | +9.9                                     | 16.5             | 16.5                                         | 22.0                                    | 19.8               | 90                                 |
| Milk <sup>5</sup> . . . . .       | 111.3            | +100.3                                   | 211.6            | 211.6                                        | 282.2                                   | 282.2              | 100                                |
| Sugar . . . . .                   | —                | +26.5                                    | 26.5             | 26.5                                         | 35.3                                    | 35.3               | 100                                |
| Tea . . . . .                     | —                | +0.3                                     | 0.3              | 0.3                                          | 0.4                                     | 0.4                | 100                                |
| Coffee . . . . .                  | —                | +1.8                                     | 1.8              | 1.8                                          | 2.4                                     | 2.4                | 100                                |

<sup>1</sup> In a few cases the only figures available were for the year 1937 or 1938.

<sup>2</sup> About 70 percent of barley, 20 percent of maize, and 50 percent of durra are fed to live-stock, and about 30 percent of vegetable oil is used for industrial purposes. Allowance is also made for seed.

<sup>3</sup> In terms of flour.

<sup>4</sup> Includes fat and offals.

<sup>5</sup> Includes all dairy products in terms of milk.

Compiled from official sources. Population: Total, 1,500,000; rural, 850,000; urban, 650,000.



## FOOD PRODUCTION AND CONSUMPTION

When considering the food situation in the Middle East, one should keep in mind the general agricultural background. Although detailed statistics are presented (see tables 1-5), they should be accepted with reservations. In the first place yearly averages of the pre-war period represent the normal way of living much more accurately than the present situation, which is the result of many abnormal factors. To be sure, some of the recent changes brought about by the war, such as curtailment of cash crops, increase of cereal acreage, and encouragement of vegetable production, have a significant bearing upon the food situation. One cannot be certain, however, that such changes will persist after the imperative demands of the war cease to exist. In the second place, accurate statistical information, for various reasons, is extremely difficult to obtain. For example, a well-known fact is that the amount of produce reported by the *fellah* varies according to the inquirer, whether the landlord, the assessor, or the buyer. Similarly, who can tell how many head of sheep are possessed by a nomadic Bedouin tribe? Furthermore, the public slaughterhouses account for only a certain portion of the meat produced, and the rest has to be estimated more or less arbitrarily. Consequently, all the figures cited, most of which are official estimates but some of which are estimates by the writer, should be taken for only rough approximations of the situation.

Production statistics reveal the following facts: (1) With the exception of Palestine, cereal production exceeds by far that of any other class of foodstuffs. (2) The three leading cereals produced are, in order of magnitude, maize, wheat, and rice for Egypt; wheat, barley, and *durra* (grain sorghum)<sup>3</sup> for Palestine, Trans-Jordan, and Syria-Lebanon; and wheat, barley, and rice (with *durra* very close to rice) for Iraq. Thus the leading cereals for the whole region are wheat, maize, barley, rice, and *durra*. As will be indicated later, however, in the actual human consumption of these cereals, barley and *durra* are of minor importance. (3) In the legume class, lentils, beans, fenugreek (the tiny dark seeds of which are mixed in bread), and chickpeas are in the lead. The production of peas is relatively small. (4) Among vegetables, onions come first, after which are eggplants, marrow squash, cucumbers, tomatoes, and green peppers. (5) Fruits are rather plentiful, with oranges, grapes, figs, apricots, melons, and dates leading. (6) Cottonseed oil predominates in Egypt, whereas olive oil leads in Palestine and Syria-Lebanon, followed by sesame oil.

The trade figures for foodstuffs show that Egypt is a significant net exporter of rice, onions, sugar, and cottonseed oil and an important net importer of vegetable oil, potatoes, and dairy products. Palestine has huge exports of citrus fruit, whereas it shows significant net imports for almost all the other items. Trans-Jordan has an appreciable surplus of cereals, with the exception of rice, all of which is imported, as is sugar. Syria-Lebanon shows a net surplus of cereals (other than rice), pulse, vegetables, fruits, and olive oil but is dependent upon imports for rice and sugar. Iraq is a net exporter of all cereals, including rice, and of dates, which constitute the most significant export item, but imports all its sugar. Coffee and tea are imported by all five countries.

When the balance of trade in foodstuffs is calculated for the region as a whole, exports of all the various classes exceed imports, except in the case of sugar, tea, coffee, and some dairy products. In other words, the region as a whole seems able to meet its food-consumption needs and to have some surplus for exportation. Whether

<sup>3</sup> In Arabic *durra* may mean also maize.

TABLE 3.—Food consumption in Trans-Jordan, pre-war average 1934-38<sup>1</sup>

| ITEM                              | GROSS PRODUCTION | NET IMPORTS (+) OR NET EXPORTS (-) | SUPPLY AVAILABLE | ESTIMATED PORTION USED FOR FOOD <sup>2</sup> | APPARENT PER CAPITA CONSUMPTION AS FOOD |        | ESTIMATED LOCAL RATE OF EXTRACTION |
|-----------------------------------|------------------|------------------------------------|------------------|----------------------------------------------|-----------------------------------------|--------|------------------------------------|
|                                   |                  |                                    |                  |                                              | GROSS                                   | NET    |                                    |
|                                   | 1,000 short tons | 1,000 short tons                   | 1,000 short tons | 1,000 short tons                             | Pounds                                  | Pounds | Percent                            |
| Wheat . . . . .                   | 89.0             | -24.9                              | 64.4             | 47.8                                         | 273.4                                   | 218.7  | 80                                 |
| Barley . . . . .                  | 41.0             | -4.7                               | 36.0             | 9.2                                          | 52.3                                    | 39.2   | 75                                 |
| Durra . . . . .                   | 7.7              | -1.3                               | 6.4              | 3.1                                          | 17.6                                    | 15.9   | 90                                 |
| Rice . . . . .                    | —                | +2.6                               | 2.6              | 2.6                                          | 15.2                                    | 15.2   | 100                                |
| Total cereals                     | 137.7            | -28.3                              | 109.4            | 62.7                                         | 358.5                                   | 3289.0 |                                    |
| Lentils . . . . .                 | 4.4              | —                                  | 4.4              | 3.6                                          | 20.7                                    | 20.7   | 100                                |
| Beans . . . . .                   | 1.5              | -0.8                               | 0.7              | 0.7                                          | 3.8                                     | 3.8    | 100                                |
| Total pulse . . . . .             | 5.9              | -0.8                               | 5.1              | 4.3                                          | 24.5                                    | 24.5   |                                    |
| Vegetables . . . . .              | 22.0             | —                                  | 22.0             | 22.0                                         | 126.5                                   | 114.6  | 90                                 |
| Grapes . . . . .                  | 26.5             | -3.3                               | 23.1             | 23.1                                         | 132.3                                   | 119.0  | 90                                 |
| Fruit, other . . . . .            | 22.0             | —                                  | 22.1             | 22.1                                         | 125.9                                   | 100.8  | 80                                 |
| Total fruit . . . . .             | 48.5             | -3.3                               | 45.2             | 45.2                                         | 258.2                                   | 219.8  |                                    |
| Olive oil . . . . .               | 0.2              | +0.1                               | 0.3              | 0.3                                          | 2.0                                     | 2.0    | 100                                |
| Beef and veal . . . . .           | 0.9              | —                                  | 0.9              | 0.9                                          | 5.1                                     | 4.6    | 90                                 |
| Mutton and lamb . . . . .         | 1.3              | —                                  | 1.3              | 1.3                                          | 7.5                                     | 6.8    | 90                                 |
| Goat and kid . . . . .            | 2.1              | —                                  | 2.1              | 2.1                                          | 11.9                                    | 10.8   | 90                                 |
| Total meat <sup>4</sup> . . . . . | 4.3              | —                                  | 4.3              | 4.3                                          | 24.5                                    | 22.2   |                                    |
| Poultry . . . . .                 | 0.3              | —                                  | 0.3              | 0.3                                          | 2.0                                     | 1.8    | 90                                 |
| Eggs . . . . .                    | 1.4              | —                                  | 1.4              | 1.4                                          | 8.2                                     | 7.3    | 90                                 |
| Milk <sup>5</sup> . . . . .       | 24.8             | —                                  | 24.8             | 24.8                                         | 141.8                                   | 141.8  | 100                                |
| Sugar . . . . .                   | —                | +4.0                               | 4.0              | 4.0                                          | 22.7                                    | 22.7   | 100                                |
| Coffee . . . . .                  | —                | +0.2                               | 0.2              | 0.2                                          | 1.3                                     | 1.3    | 100                                |

<sup>1</sup> In some cases the only average available was for 1936-38.

<sup>2</sup> About 70 percent of barley and 50 percent of durra are fed to livestock. Allowance is also made for seed.

<sup>3</sup> In terms of flour.

<sup>4</sup> Includes fat and offals.

<sup>5</sup> Includes all dairy products in terms of milk.

Compiled from official sources. Population: Total, 350,000; rural, 250,000; urban, 100,000.

such food consumption is indicative of an adequate diet, or not, is another question that will be discussed later.

An analysis of the statistics showing per capita consumption of various food-stuffs reveals the following points:

(1) As expected, the consumption of cereals is quite high. Egypt leads, with 377.2 pounds, and Palestine is last, with 254.0 pounds. The higher rate of Egypt may be assumed to be, however, more representative of the situation in the whole region. This is due to the fact that Egypt accounts for the bulk of the total population and the further fact that estimates for Iraq, Syria, and Trans-Jordan are believed to be lower than actual production.

(2) The rate of the consumption of pulse is also high, ranging from 7.5 pounds in Palestine to 49.6 pounds in Egypt. This high rate may be explained by the fact that the staple diet among most of the *fellahin* consists of bread and a dish of pulse.

(3) On the other hand, consumption of potatoes as compared with that in European countries is extremely low, ranging from about 1 pound in Iraq to 6.6 in Egypt and 27.8 in Palestine. The consumption of other vegetables is fairly high, and one should note, in this connection, that there is considerable consumption of wild roots, herbs, tree leaves, and flowers, which is not taken into account in these figures.

(4) The high rate of fruit consumption is explained by the abundance of grapes, figs, melons, citrus (especially in Palestine), and dates (mainly in Iraq). The wide difference, however, between the rate for Egypt (63.9 pounds) and that for Palestine (304.9 pounds) should not be overlooked.

(5) Finally, the consumption of meat is found to be low for all five countries, and the same is true of milk, especially in the case of Egypt.

### INTERPRETATION

As has been stated above, the statistical information presented in the tables should be considered as a rough approximation only of the actual food situation in the Middle East. Even when such figures of average per capita consumption are highly accurate, they fail to reveal important underlying trends, which should be pointed out in order to present a realistic picture. In the first place, emphasis should be placed on the high concentration of food consumption within certain classes of the population in each of the countries considered. In Egypt, for example, abundant supplies of all varieties of foodstuffs, locally produced or imported, are maintained in the cities and are accessible to the well-to-do urban classes. On the other hand, the rest of the population (not less than 75 percent) live on a diet that is deficient in quantity and variety. The daily diet of a poor urban family, for example, consists of little else than bread, beans with oil, onions, and some cheap vegetables and fruits in season.<sup>4</sup>

The fact that the Egyptian *fellah* eats little besides maize is well known.

"That the fellah practically lives on *durra* (maize) is a fact already obvious to all. He consecrates a certain portion of his feddans to raising *durra*, which he stores for his year's food supply. That he gets meat at most only on the weekly market day is also a commonplace, and that he often sells his milk and cheese and butter because he can not afford to eat them is likewise generally known."<sup>5</sup>

"The Egyptian *fellahin*, who form the great majority of the population, are among the most miserable people of the world suffering from malnutrition. Because of their extreme poverty, they are in constant hunger. Many of them can be seen sucking the roots of grass for some nutrition..."<sup>6</sup>

The same is more or less true in other parts of the region.

There is another factor which suggests that the amount of food actually consumed by the bulk of the population is less than that shown by the figures of per capita consumption. The whole region is a strong center of attraction for tourists from various parts of the world. This is especially true of Egypt and Palestine. Undoubtedly the food consumed by these tourists, which is normally the best the country can afford, accounts for a significant portion of the total consumption.

A third condition which is not revealed by the average per capita consumption is the seasonal distribution of foodstuffs. The practical absence of modern techniques of storage and canning and the poor means of transportation, especially in the interior of the region, have made it imperative that the consumption of perishable, protective foodstuffs should be limited mainly to the season and the locality in which they are produced. For instance, the consumption of fresh grapes and figs is limited to 2 months during the summer or early fall. The abundant apricots of the Damascus oasis rarely find their way to the interior plains. In 1938 about 14 million cases

<sup>4</sup> See lists of various diets presented by AL-WAKIL, DR. A. [PRELIMINARY RESULTS OF EXPERIMENTS WITH EGYPTIAN DIETS.] Egypt. Med. Assoc. Jour. 23: 578-590, illus. 1940 [In Arabic.]

<sup>5</sup> See reference cited in footnote 2, page 77.

<sup>6</sup> 'ANAN, H. BEY. [RELATIONSHIP BETWEEN AGRICULTURAL PRODUCTION AND THE PEOPLE'S DIET.] Egypt. Med. Assoc. Jour. 22: 237-247. 1939. See p. 242.



TABLE 4.-Food consumption in Syria and Lebanon, pre-war average 1934-38<sup>1</sup>

| ITEM                              | GROSS PRODUCTION  | NET IMPORTS (+) OR NET EXPORTS (-) | SUPPLY AVAILABLE | ESTIMATED PORTION USED FOR FOOD <sup>2</sup> | APPARENT PER CAPITA CONSUMPTION AS FOOD |                    | ESTIMATED LOCAL RATE OF EXTRACTION |
|-----------------------------------|-------------------|------------------------------------|------------------|----------------------------------------------|-----------------------------------------|--------------------|------------------------------------|
|                                   |                   |                                    |                  |                                              | GROSS                                   | NET                |                                    |
|                                   | 1,000 short tons  | 1,000 short tons                   | 1,000 short tons | 1,000 short tons                             | Pounds                                  | Pounds             | Percent                            |
| Wheat . . . . .                   | 548.9             | +2.2                               | 551.2            | 460.8                                        | 307.1                                   | 245.6              | 80                                 |
| Barley . . . . .                  | 352.7             | -28.7                              | 324.1            | 58.4                                         | 39.0                                    | 29.3               | 75                                 |
| Maize . . . . .                   | 27.6              | -0.3                               | 27.2             | 20.7                                         | 13.9                                    | 12.6               | 90                                 |
| Ourra . . . . .                   | 86.0              | -19.8                              | 66.1             | 31.6                                         | 21.2                                    | 18.9               | 90                                 |
| Rice . . . . .                    | —                 | +20.9                              | 20.9             | 21.0                                         | 13.9                                    | 13.9               | 100                                |
| Total cereals . . . . .           | 1,015.2           | -25.7                              | 989.5            | 592.5                                        | 395.1                                   | <sup>3</sup> 320.3 |                                    |
| Potatoes . . . . .                | 46.3              | -5.5                               | 40.8             | 33.1                                         | 22.0                                    | 19.8               | 90                                 |
| Lentils . . . . .                 | 36.4              | -13.3                              | 23.1             | 19.8                                         | 13.2                                    | 13.2               | 100                                |
| Pulse, other . . . . .            | 31.9              | -19.8                              | 12.1             | 7.7                                          | 5.1                                     | 5.1                | 100                                |
| Total pulse . . . . .             | 68.3              | -33.1                              | 35.2             | 27.5                                         | 18.3                                    | 18.3               |                                    |
| Onions . . . . .                  | 45.2              | -19.8                              | 25.3             | 25.3                                         | 16.8                                    | 16.8               | 100                                |
| Vegetables, other . . . . .       | 220.4             | —                                  | 220.5            | 220.5                                        | 146.8                                   | 132.2              | 90                                 |
| Total Vegetables . . . . .        | 265.6             | -19.8                              | 245.8            | 245.8                                        | 163.6                                   | 149.0              |                                    |
| Citrus fruit . . . . .            | 54.0              | -12.0                              | 41.9             | 41.9                                         | 27.8                                    | 22.3               | 80                                 |
| Grapes . . . . .                  | 212.7             | -5.5                               | 207.2            | 207.2                                        | 138.0                                   | 124.3              | 90                                 |
| Melons . . . . .                  | 207.2             | —                                  | 207.2            | 207.2                                        | 138.0                                   | 103.6              | 75                                 |
| Figs . . . . .                    | 18.7              | -2.2                               | 16.5             | 16.5                                         | 11.0                                    | 11.0               | 100                                |
| Apricots . . . . .                | 28.7              | —                                  | 28.7             | 28.7                                         | 19.0                                    | 15.2               | 80                                 |
| Fruit, other . . . . .            | 20.9              | +4.4                               | 25.4             | 25.4                                         | 16.7                                    | 13.5               | 80                                 |
| Total fruit . . . . .             | 542.2             | -15.3                              | 526.9            | 526.9                                        | 350.5                                   | 289.9              |                                    |
| Nuts . . . . .                    | 7.7               | +1.1                               | 8.8              | 8.8                                          | 5.7                                     | 2.9                | 50                                 |
| Oil, olive . . . . .              | 17.3              | -7.2                               | 10.1             | 7.1                                          | 4.6                                     | 4.6                | 100                                |
| Oil, other . . . . .              | 0.8               | +4.7                               | 5.5              | 5.5                                          | 3.5                                     | 3.5                | 100                                |
| Total veg. oil . . . . .          | 18.1              | -2.5                               | 15.6             | 12.6                                         | 8.1                                     | 8.1                |                                    |
| Beef and veal . . . . .           | 6.6               | —                                  | 6.6              | 6.6                                          | 4.4                                     | 4.0                | 90                                 |
| Mutton and lamb . . . . .         | 20.9              | —                                  | 20.9             | 20.9                                         | 13.9                                    | 12.3               | 90                                 |
| Goat and kid . . . . .            | 2.9               | —                                  | 2.9              | 2.9                                          | 2.0                                     | 1.8                | 90                                 |
| Total meat <sup>4</sup> . . . . . | 30.4              | —                                  | 30.4             | 30.4                                         | 20.3                                    | 18.1               |                                    |
| Poultry . . . . .                 | 2.2               | —                                  | 2.2              | 2.2                                          | 1.3                                     | 1.1                | 90                                 |
| Fish . . . . .                    | —                 | —                                  | —                | —                                            | —                                       | —                  | —                                  |
| Eggs . . . . .                    | 13.2              | -4.9                               | 8.3              | 8.3                                          | 5.5                                     | 5.1                | 90                                 |
| Milk <sup>5</sup> . . . . .       | 531.0             | -3.3                               | 528.0            | 528.0                                        | 351.9                                   | 351.9              | 100                                |
| Sugar . . . . .                   | <sup>6</sup> 12.8 | +35.0                              | 48.0             | 48.0                                         | 32.0                                    | 32.0               | 100                                |
| Coffee . . . . .                  | —                 | +1.3                               | 1.3              | 1.3                                          | 0.9                                     | 0.9                | 100                                |

<sup>1</sup> In some cases the only average available was for 1936-38.

<sup>2</sup> About 80 percent of barley, 20 percent of maize, and 50 percent of durra are fed to live-stock, and about 30 percent of olive oil is used for industrial purposes. Allowance is also made for seed.

<sup>3</sup> In terms of flour. <sup>4</sup> Includes fat and offals. <sup>5</sup> Includes all dairy products in terms of milk. <sup>6</sup> Honey.

Compiled from official sources. Population: Total, 3,000,000; rural, 2,100,000; urban, 900,000.



of citrus fruit were exported from Palestine to Europe and only about 3 million cases were left in the country. Of these a small portion reached the *fellahin* of the interior plains. In 1938 about 14 million cases of citrus fruit were exported from Palestine to Europe and only about 3 million cases were left in the country. Of these a small portion reached the *fellahin* of the interior villages and almost none were consumed by the nomadic tribes.

Probably the main factor responsible for the development and persistence of the food problem in the Middle East is the prevailing land-tenure system. The greater portion of the land is owned by a small minority of absentee landlords. The primary interest of these is in the production of cash crops, such as cotton,<sup>7</sup> citrus, dates, barley, wheat, or tobacco. Other crops are tolerated only because they are necessary to keep alive animals and human beings engaged in the production of cash crops. Diversification of agriculture, with a view to supplying the tenant *fellah* with a balanced diet, is not possible within such a system. Another form of land tenure is a pseudocommunal system by which the *fellahin* of a village community own certain shares of the land, but no specific plots. The cultivator of a certain plot this year will find himself cultivating a different plot within an interval of 2 to 5 years. Consequently, he does not feel motivated to improve the fertility of the soil, grow fruit trees, or diversify his agriculture in other ways. His food consists mainly of the few cereals that are customarily produced by the whole community.

Another indication of the deficiency of the popular diet is afforded by the prevailing health conditions. The incidence of the eye disease, trachoma, in the various countries of the region is known to reach the very high rate of 70 to 90 percent, for which malnutrition is now believed to be partly responsible. There is also pellagra, a disease that is widely spread among the masses, especially in Egypt, and which is caused by deficient diet. In a recent study, undertaken in Cairo, about 70 percent of a sample of school children showed signs of malnutrition. Estimates also indicate that not less than 45 percent of all Egyptian children under 2 years of age suffer from rickets.<sup>8</sup>

In the case of Palestine, one should remember that there are two significantly different communities, the Jews and the Arabs. The Jews, who numbered about 500,000 in 1938, as far as food consumption is concerned, are not typical of the region as a whole. In general, they tend to consume less bread and more meat, dairy products, and protective foods than the Arabs. Consequently, if the Arabs of Palestine should be considered separately from the Jews, their food consumption would be represented more adequately by the figures shown for Syria and Lebanon.

### DIETARY HABITS

Although the amount of foodstuffs produced and the average per capita consumption have been considered, they tell only a part of the food story of the Middle East. The other part, which is no less important, relates to the prevailing practices and habits by which these various items are prepared for actual daily consumption.<sup>9</sup> At the top of the list stands bread, which is to these people literally "the bread of life." They

<sup>7</sup> For a detailed presentation of Egyptian agriculture and the dominant role played by cotton, see HAZEN, N. WILLIAM. WARTIME ASPECTS OF EGYPTIAN AGRICULTURAL ECONOMY. *Foreign Agr.* 5: 217-249, illus. 1941.

<sup>8</sup> AL-WAKIL, DR. A. [THE RELATIONSHIP BETWEEN NUTRITION AND PUBLIC HEALTH.] *Egypt. Med. Assoc. Jour.* 22: 801-825. 1939. [In Arabic.]

<sup>9</sup> This aspect of the situation is dwelt upon primarily because of its direct bearing upon any project of relief and rehabilitation.

TABLE 5.-Food consumption in Iraq, pre-war average 1934-38<sup>1</sup>

| ITEM                              | GROSS PRODUCTION | NET IMPORTS (+) OR NET EXPORTS (-) | SUPPLY AVAILABLE | ESTIMATED PORTION USED FOR FOOD <sup>2</sup> | APPARENT PER CAPITA CONSUMPTION AS FOOD |        | ESTIMATED LOCAL RATE OF EXTRACTION |
|-----------------------------------|------------------|------------------------------------|------------------|----------------------------------------------|-----------------------------------------|--------|------------------------------------|
|                                   |                  |                                    |                  |                                              | GROSS                                   | NET    |                                    |
|                                   | 1,000 short tons | 1,000 short tons                   | 1,000 short tons | 1,000 short tons                             | Pounds                                  | Pounds | Percent                            |
| Wheat . . . . .                   | 527.0            | -58.4                              | 468.6            | 394.6                                        | 197.3                                   | 157.9  | 80                                 |
| Barley . . . . .                  | 634.0            | -225.9                             | 408.1            | 102.5                                        | 51.4                                    | 38.6   | 75                                 |
| Durra . . . . .                   | 139.0            | -25.4                              | 113.6            | 75.0                                         | 37.5                                    | 33.7   | 90                                 |
| Rice . . . . .                    | 180.0            | -1.5                               | 178.5            | 158.7                                        | 79.3                                    | 53.1   | 67                                 |
| Total cereals . . . . .           | 1,480.0          | -311.2                             | 1,168.8          | 730.8                                        | 365.5                                   | 3283.3 |                                    |
| Potatoes . . . . .                | —                | +2.2                               | 2.2              | 2.2                                          | 1.1                                     | 0.9    | 90                                 |
| Beans . . . . .                   | 22.0             | -6.2                               | 15.8             | 14.1                                         | 7.1                                     | 7.1    | 100                                |
| Lentils . . . . .                 | 6.6              | —                                  | 6.6              | 6.0                                          | 3.1                                     | 3.1    | 100                                |
| Pulse, other . . . . .            | 16.5             | —                                  | 16.5             | 13.2                                         | 6.6                                     | 6.6    | 100                                |
| Total pulse . . . . .             | 45.1             | -6.2                               | 38.9             | 33.3                                         | 16.8                                    | 16.8   |                                    |
| Vegetables . . . . .              | 220.5            | —                                  | 220.5            | 220.5                                        | 110.2                                   | 99.2   | 90                                 |
| Dates . . . . .                   | 370.4            | -200.6                             | 169.8            | 169.8                                        | 84.9                                    | 67.9   | 80                                 |
| Fruit, other . . . . .            | 110.2            | —                                  | 110.2            | 110.2                                        | 55.1                                    | 44.1   | 80                                 |
| Total fruit . . . . .             | 480.6            | -200.6                             | 280.0            | 280.0                                        | 140.0                                   | 112.0  |                                    |
| Oil, vegetable . . . . .          | 2.0              | +1.1                               | 3.1              | 3.1                                          | 1.5                                     | 1.5    | 100                                |
| Beef and veal . . . . .           | 8.8              | —                                  | 8.8              | 8.8                                          | 4.4                                     | 4.0    | 90                                 |
| Mutton and lamb . . . . .         | 30.9             | —                                  | 30.9             | 30.9                                         | 15.5                                    | 13.9   | 90                                 |
| Goat and kid . . . . .            | 11.0             | —                                  | 11.0             | 11.0                                         | 5.5                                     | 5.0    | 90                                 |
| Total meat <sup>4</sup> . . . . . | 50.7             | —                                  | 50.7             | 50.7                                         | 25.4                                    | 22.9   |                                    |
| Poultry . . . . .                 | 3.3              | —                                  | 3.3              | 3.3                                          | 1.5                                     | 1.3    | 90                                 |
| Fish . . . . .                    | —                | —                                  | —                | —                                            | —                                       | —      | —                                  |
| Eggs <sup>5</sup> . . . . .       | 12.1             | —                                  | 12.1             | 12.1                                         | 6.0                                     | 5.3    | 90                                 |
| Milk <sup>5</sup> . . . . .       | 330.7            | -9.9                               | 320.8            | 320.8                                        | 160.3                                   | 160.3  | 100                                |
| Sugar . . . . .                   | —                | +40.8                              | 40.8             | 40.8                                         | 20.3                                    | 20.3   | 100                                |
| Tea . . . . .                     | —                | +3.0                               | 3.0              | 3.0                                          | 1.5                                     | 1.5    | 100                                |
| Coffee . . . . .                  | —                | +1.1                               | 1.1              | 1.1                                          | 0.4                                     | 0.4    | 100                                |

<sup>1</sup> In some cases the only average available was for 1936-38.

<sup>2</sup> About 70 percent of barley and 30 percent of durra are fed to livestock. Also allowance is made for seed.

<sup>3</sup> In terms of flour.

<sup>4</sup> Includes fat and offals.

<sup>5</sup> Includes all dairy products in terms of milk.

Compiled from official sources. Population: Total, 4,000,000; rural, 3,200,000; urban, 800,000.

eat it morning, noon, and evening. No meal is considered complete unless plenty of bread is consumed with it. In reality bread may be called the main meal, with which something else is consumed.

The extent and significance of bread consumption can be appreciated when one realizes that in the majority of cases it is used in place of a spoon or a fork. An appropriate piece is torn off the loaf (which is thin and round, as will be described later), wrapped around a portion of the food, and the whole eaten as one mouthful. Thus with every mouthful of olive, onion, cereal, stew, and even soup goes a piece of bread. Along the coasts of Palestine and Syria, it is "bread and olive oil"; in the interior of these countries and in Iraq, it is "bread and *samn*" (clarified butter); in Egypt, it is "corn bread"; in the choice of cereals for the making of bread, first place is given by most people to wheat, followed by corn and then durra.

Barley is used to a negligible extent, and mainly in stringent situations. It is used to feed livestock, and there is a prejudice against its use for human beings. There are several well-known lines of poetry in Arabic literature that give expression to this prejudice. One of them may be translated as follows: "Behold a so-called

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Emir who enjoys wheat bread secretly and offers his guest barley bread to eat." The display of a great quantity of wheat-bread loaves at a banquet is a sign of distinction for the host. Sometimes a mixture of these cereals is used in making flour.

The preparation of bread is a well-established activity in the culture of the region, especially among the rural people. In their division of labor between the sexes, they have assigned bread making to women. In view of the enormous quantity of bread consumed, one can understand why a village woman spends a good part of her day in bread making. The most important part of the activity is baking, which is done in the *fourn*, in the *tannour*, in the *taboun*, or on the *saj*.¹⁰ The resulting bread in each case is in the form of round, pliable loaves, varying in diameter from 0.5 to 2 feet, which may be as thin as a napkin.

When the community bakery is used, usually enough bread is made to last the family at least one week. An interesting feature of this type of village bakery is that it has become a traditional center of a cooperative activity and social visiting. Families take turns at using the bakery, and women of the neighborhood rally to the help of that family which happens to have the turn. As they sit down at both sides of a long table, pounding the dough into thin loaves and passing them on to the baker in front of the oven, they gossip about the affairs of the village.

Among cereals, consumed as such, and pulse, the most important are rice, *burghul* (described later), lentils, and beans. Rice is consumed heavily in Egypt and Iraq, where it is produced. Its consumption in the rest of the region is much lower, although it is greatly desired. It is offered at banquets, and the well-to-do consume much of it as a sign of luxury and distinction.

The main method of preparing rice is to cook it with *samn* and serve it with chicken or lamb, or with a stew made of a vegetable and lamb. Sometimes it is served alone or used in various stuffings.

The use of *burghul* is extensive in Palestine, Syria, and Lebanon. In these countries it may be termed as "the national cereal." Practically every household prepares a year's store of it. It is made of wheat by a process of boiling, drying in the sun, removing some of the bran by sprinkling with water and rubbing with hands, then crushing at the mill into a fine or a coarse cereal. *Burghul* is usually prepared in the fall, after the wheat harvest. During that season life in the village becomes highly *burghul*-centered, and most of the work involved is done cooperatively.

The coarse variety of *burghul* is consumed in much the same way as rice. The finer variety is used almost exclusively in preparing the well-known and highly coveted dish of *kubbeh*, especially in Lebanon. The basic material of this dish consists of lean lamb, or mutton, and *burghul*, pounded together in a large mortar into a thick paste. This is called *raw kubbeh* and may be consumed as such, with the addition of onion and *samn* or olive oil, or it may be cooked into a number of dishes. On feast days, at banquets held in connection with various ceremonies, and when there are honored guests to be entertained, *kubbeh* takes the prominent place. One of the first essentials in the furniture of a Lebanese home is the heavy and beautifully masoned stone mortar for the making of *kubbeh*.

¹⁰ The *fourn* is a community bakery. The *tannour* is a hollow conical structure of clay, erected in the courtyard, about 4 feet high and 10 feet in circumference at the base. Fire blazes at the bottom, and the dough is baked by pressing and spreading it until it sticks on the inside of the circular wall. The *taboun* is similar to the *tannour* except that it is lower, is heated from the outside, and the bread is baked on hot pebbles at the bottom of it. The *saj* is a round and convex sheet of iron which is heated over an open fire.


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Lentils are consumed extensively in the form of soup or in the well-known dish, *mujaddarah*. This is usually made by cooking lentils with *burghul* and onions in vegetable oil. Beans are consumed in much the same way as lentils. Sometimes they are cooked with lamb into a stew and served with rice. Finally, a common practice is to cook all available cereals and pulse with onion and vegetable oil, or *samn*, to make a dish called *makhluta*, which means literally a mixture.

An outstanding feature in the consumption of vegetables is the practice of eating them raw. People help themselves to such vegetables whenever they can, at meal time and between meals. Wildherbs are similarly consumed. Undoubtedly this has been a redeeming factor in the unbalanced diet of the region. Onions are greatly relished and appear practically at every meal, either cooked with the dish or raw. Other outstanding vegetables are eggplants, tomatoes, cucumbers, green and red peppers, marrow squash, cabbage, and *mulukhyah* (an herb consumed mainly in Egypt). When cooked, vegetables are usually prepared into the common dish *yekhneh*, a stew made of a vegetable, lamb, onion, and *samn*. Another common practice is to stuff them with rice and minced lamb and cook them in *samn*. This is the well-known dish, *mahshi*, which means stuffed.

During the short season, when they are most available, and in the restricted areas where they are grown, fresh fruits are popular and are consumed in large quantities. In the vineyards and orchards or at home, during meals or between meals, people help themselves freely to fruit. For a man to consume 3 large bunches of grapes, or 6 oranges, or some 30 figs a day is not unusual. Such concentrated consumption gives the impression that the human organism tries to make up for the complete lack of fruit during other seasons of the year.

In Lebanon, Syria, and Palestine consumption of olives and olive oil is prominent. During the olive season, in the late fall and early winter, agricultural activity is mainly concerned with this important crop, and from practically every village emanates a pungent smell of olive oil. People are then busy beating down the fruit from trees, gathering, and sorting it, according to whether it is to be pickled for direct consumption or to be pressed into oil.

The inferior grade of olive oil is used for making soap and the superior grade for human consumption. It serves as the main fat for cooking, replacing butter to a great extent. It is used in frying various vegetables and in preparing the various *yekhneh* dishes previously mentioned. Also a good portion of it is consumed raw. Next to cereal for making bread, every family is anxious to have a year's store of olive oil. It is easy to store, for it keeps well during all seasons. Olives also are stored for the whole year and appear practically at every meal. Large quantities of them are consumed. Many times a farmer's breakfast consists of a loaf of bread (as described above), a plateful of olives, and an onion.

Regarding the consumption of meat, there are several distinctive characteristics. First of all, the Muslims, who constitute from 80 to 90 percent of the population, have a strong religious taboo against eating pork. This meat is so repulsive to them that they prefer to go hungry rather than touch it. This feeling is shared by the orthodox Jewish minority. Under the influence of the Muslim culture, the native Christians have in general abstained from eating pork, although religiously they have nothing against it.

A second similar idea is that animals, including poultry, should be butchered according to a prescribed manner, by cutting the throat with a sharp knife and letting the blood drain off. The Arabic word for the verb "to butcher" is *dhabaha*, which commonly denotes the slaughtering operation just described. A strong aversion exists



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to meat from animals that are butchered in any other way. When an animal is about to die as a result of an accident - a stunning blow on the head, falling over the side of a terrace, or choking at the tether - the farmer's first concern is to rush with a knife to the side of the dying animal and cut the throat. If no blood runs out, no one is likely to touch that meat.

Another interesting fact is that in Lebanon (and to a limited extent in other localities) the people relish raw meat. Usually, whenever meat is brought home to be cooked for the main dish of the day, a certain portion of it is set aside and consumed raw, with bread, salt, and pepper. Certain parts of the animal are especially desired for raw consumption. These are usually tender lean cuts, the liver, and the fat tail of sheep. Raw meat has an obvious vitamin advantage, but it is partly responsible for some widely spread intestinal worms of the region. The consensus, however, is that cattle, and not sheep or goats, serve as a secondary host for these parasites.

A further observation is that one is struck by the high degree of efficiency in which the slaughtered animal is consumed. Almost every part of the animal, excepting the skin, the hoofs, the blood, and the lungs, is eaten. Sometimes even the lungs are not neglected. The whole head is cooked into a main dish for the family. The eyes, the ears, the brains, and every bit of meat on the skull is eaten. The bones are used for making soup, and the marrow they contain is patiently extracted. The sound of teeth crunching bones is not unusual at meal time. The stomach and intestines are cleaned thoroughly; stuffed with rice, minced lamb, and pine nuts or almonds; and cooked into a much-relished dish. The liver is highly prized and sometimes eaten raw. Most of the organs are considered delicacies and usually eaten broiled. Finally, one must remember that practically all the meat consumed is fresh; it is cooked and eaten the same day the animal is killed. Storage facilities are not available.

Milk and other dairy products are obtained from sheep, goats, cows, buffaloes (especially in Egypt), and camels (among the Bedouin tribes). Although the people drink fresh milk to a limited extent, they usually prefer it after it has been boiled. More often the milk is fermented, by the addition of a culture, into what is called *leben* (*leben zabada* or *leben rayeb* in some localities). This keeps better than milk, is relished as a cooling drink, and is easily digestible. Butter is normally converted into *samn* by boiling. In this form, as pure butterfat, it keeps well in the hot climate. White cheese is the most common, made mainly from goat and sheep milk.

The Muslim religion has strictly tabooed all alcoholic drinks. Partly as a result of that, coffee has become the most significant beverage of the region. It is drunk by the nomadic Bedouin, the settled *fellah*, and the city dweller. For over a thousand years they have used it, until a body of tradition has been built around it in their culture. It is the significant symbol of hospitality and honor offered to a guest. A refusal of it is taken as an insult by the *fellah* and as a sign of enmity by the Bedouin. Unlike other foods, the art of preparing coffee is displayed in front of the guest. It is roasted over an open fire in a brazier, pounded with well-measured rhythm in a large mortar of hard wood, boiled in a brass kettle to the right consistency; then it is poured into small round cups, from which it is sipped with much noise. This serves the double purpose of expressing one's appreciation and of cooling it before it burns the tongue. "May your coffee last forever," says the guest when he finishes his cup.¹¹

¹¹ This is the so-called Turkish coffee.

RECENT AGRICULTURAL-POLICY DEVELOPMENTS IN PANAMA

By Kathryn H. Wylie*

As a result of the Government's new policy of expanded agricultural production, the Republic of Panama is abandoning its traditional position of almost complete dependence on other countries for its food and fiber needs. Measures to expand domestic production include the establishment of an agricultural bank, the distribution of farm land, and the inauguration of a national farm plan. Tariff adjustments have been made and price regulations set up to implement the new program. In addition, the Government is providing more agricultural machinery and better internal transportation facilities to move farm products to market. More home-grown food is expected to relieve the present shipping difficulties and to provide a firmer base for Panama's war and post-war economy.

The Republic of Panama contains about 29,000 square miles. By far the greater part of the agriculture of the Republic is in the provinces west of the Canal Zone, a strip of land 5 miles wide on either side of the Panama Canal (figure 1). The coastal regions are hot, with an annual average temperature of 80° F. and little variation from season to season. Higher in the mountains the average temperature is about 66° F. Rainfall is heaviest during October and November, although the rainy season extends from May through December. The Atlantic coast receives the heaviest rainfall, an average of about 140 inches a year; the Pacific coast receives 60 inches; and the interior, about 93 inches.

From the time of the discovery of America until now the narrow Isthmus of Panama has been of a strategic importance far out of proportion to its size. In the early years of the conquest this strip of land offered a short route for transshipment of gold, silver, and emeralds from the west coast of South America to the mother country. In the present war the protection of the Canal is one of the chief concerns in Western Hemisphere defense.

About two-thirds of Panama's inhabitants, totaling 632,000, are rural, and almost 65,000 are Indians living in tribes. Population density is greatest in the small Province of Herrera, although the Province of Panamá has the largest number of people, 28 percent of the total. The urban population is concentrated largely in the two cities of Colón and Panamá, located at either end of the Canal. Most of the food for the cities of the Republic, as well as for the Canal Zone, must be imported, although the rural people usually produce enough staple foods for their own needs.

PANAMA'S FOOD PROBLEM

Throughout the greater part of its history, the value of Panama's merchandise imports has been two or three times that of its exports. Prior to the war imports of food accounted for from 15 to 20 percent of total imports (value). Since the outbreak of war, Panama's usual needs for foodstuffs and fibers have been greatly intensified. Imports of food alone jumped in value from \$3,694,000 in 1939 to \$4,957,000 in 1941 and \$7,347,000 in 1942, as a result partly of price increases and partly of

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FIGURE 1.-Map of the Republic of Panama.

expanded volume. Increased defense activities in the Canal Zone have drawn a larger-than-average residential population to the Republic and placed a sharply increased purchasing power in the hands of defense workers and others.

Along with larger food needs has gone declining agricultural production intensified by a wholesale exodus of workers from the farms to higher paid war jobs both in the Canal Zone and in urban centers. Despite this tight farm-labor situation, the Government's positive program for encouraging farmers to produce more rice, potatoes, sugar, poultry, and other products already is showing results. By 1944 the program is expected to make Panama largely independent of outside supplies of basic foodstuffs.

FOOD CROPS

The principal staple food of the village people in Panama is rice, followed by corn, yuca, plantains, sugar, and beans. The 1942 area in these six crops totaled more than 287,000 acres (table 1). The four Provinces of Coclé, Chiriquí, Los Santos, and Veraguas - all on the Pacific Ocean west of the Canal Zone - accounted for 82 percent of the acreage in these major foodstuffs (table 2).

Normally, the estimated rice consumption of the country varied between 55 and 60 million pounds a year; domestic production furnished approximately 85 percent and imports, including purchases at Canal Zone commissaries, about 15 percent. Domestic production in 1941, however, totaled almost 60 million pounds of milled rice, and in 1942 it was increased to 85 million pounds. Of the total crop 85 percent is grown in

TABLE 1.-Acreage and production of principal food crops in Panama, by Provinces, 1942

PROVINCE	RICE ¹		CORN		YUCA		PLANTAINS	
	ACREAGE	PRODUC-TION	ACREAGE	PRODUC-TION	ACREAGE	PRODUC-TION	ACREAGE	PRODUC-TION
	<i>Acres</i>	<i>1,000 pounds</i>	<i>Acres</i>	<i>1,000 bushels</i>	<i>Acres</i>	<i>1,000 pounds</i>	<i>Acres</i>	<i>1,000 stems</i>
Bocas del Toro	136	33	237	2	114	338	309	85
Coclé	13,259	6,091	10,124	123	9,330	51,523	3,412	496
Colón	2,389	1,890	1,161	17	1,129	2,002	1,297	174
Chiriquí	20,167	23,346	12,535	214	5,221	19,828	4,633	700
Darién	2,165	2,602	1,379	31	—	—	—	—
Herrera	9,874	8,758	10,274	216	—	—	—	—
Los Santos	19,350	15,060	17,608	428	6,598	25,307	7,336	1,192
Panamá	7,317	3,945	5,918	88	3,580	9,701	3,959	899
Veraguas	31,705	23,232	24,738	289	6,188	11,344	3,297	502
Others								
Total	106,362	84,957	83,974	1,408	32,160	120,043	24,243	4,048
No. of farms reporting	36,372		31,613		25,720		18,642	

PROVINCE	SUGARCANE				BEANS		POTATOES	
	ACREAGE	PRODUCTION			ACREAGE	PRODUC-TION	ACREAGE	PRODUC-TION
		SUGAR ²	PANELA	MOLASSES				
	<i>Acres</i>	<i>Short tons</i>	<i>Short tons (3)</i>	<i>1,000 pounds</i>	<i>Acres</i>	<i>1,000 pounds</i>	<i>Acres</i>	<i>Bushels</i>
Bocas del Toro	91	—	—	5	20	4	(4)	(5)
Coclé	5,812	2,808	153	406	1,885	722	(4)	64
Colón	121	—	—	(3)	37	12	(4)	51
Chiriquí	4,772	601	763	84	4,747	1,235	395	28,492
Darién	—	—	—	—	—	—	(4)	(5)
Herrera	—	—	—	—	—	—	(4)	(5)
Los Santos	8,239	669	37	5,588	3,131	1,491	(4)	(5)
Panamá	988	—	22	68	368	179	(4)	(5)
Veraguas	3,286	—	160	637	7,292	2,750	22	979
Others							(4)	14
Total	23,309	4,078	1,135	6,788	17,480	6,393	417	29,600
No. of farms reporting	9,972				9,997		296	

¹ Milled. ² White. ³ Less than 0.5 unit. ⁴ If any, negligible. ⁵ If any, included in others.

CENSO AGRO-PECUARIO, 1942. Ministerio de Agricultura y Comercio, Panama, 1943.

the four Provinces of Veraguas, Chiriquí, Los Santos, and Herrera, on the Pacific-coast side of western Panama.

Corn production rose from 992,000 bushels in 1941 to 1,408,000 in 1942. While corn is grown in every province, the principal region is west of the Canal Zone on the Pacific coast.

More than half the normal potato requirements of about 83,000 bushels are imported, although in 1942 imports alone exceeded this figure. Domestic production of 29,600 bushels in 1942 was concentrated largely in Chiriquí. Production of sugar has increased recently and supplies the home market in most years. The production of white sugar during the 5 years 1938-42 averaged 4,337 short tons, more than two-thirds of which was processed by the two mills in the Province of Coclé. In addition to white sugar, more than 2 million pounds of panela (a kind of brown sugar) and almost 7 million pounds of molasses were produced in 1942. Yuca and plantains, which amounted to 120,043,000 pounds and 4,048,000 stems, respectively, were produced in all provinces except Darién and Herrera.

TABLE 2.-Acreage of 6 major food crops of Panama by Provinces, 1942

PROVINCE	ACREAGE	PROVINCE	ACREAGE
	<i>Acres</i>		<i>Acres</i>
Bocas del Toro	907	Herrera	20,148
Coclé	43,822	Los Santos	62,262
Colón	6,134	Panamá	22,130
Chiriquí	52,075	Veraguas	76,506
Darién	3,544	Total	287,528

CENSO AGRO-PECUARIO, 1942. Ministerio de Agricultura y Comercio, Panama, 1943

Dependence Upon United States

Imports of a wide variety of products supplement the supply of bananas and other tropical fruits and vegetables produced in Panama (table 3). Wheat flour, fats and oils, malt, rice, meats, and canned milk, both evaporated and powdered, are the principal foods imported. The United States normally supplies the greater part of Panama's total imports, including food, but there are a few notable exceptions. The Orient, for example, in 1939 furnished most of the imported rice and peanuts; British Empire countries were important for sugar, vegetable oils, and fish products; Germany was the source of most of the malt imported; and the Netherlands contributed dairy products, particularly evaporated and condensed milk. The United States, nevertheless, furnished two-thirds of all food imported in 1939, which may be regarded as a normal year.

Ecuador has sent rice; Cuba, sugar and alcohol; and the other Central American Republics, eggs and fresh vegetables to relieve Panama's food shortage. The United States' share of total trade, including foodstuffs, rose from 58 percent in 1939 to 80 percent in 1941. The United States' share dropped to 76 percent in 1942 and that of Central and South America increased.

Livestock

Cattle and poultry are already important in the Panamanian diet, and both offer opportunities for expanded production. Cattle are scattered over the country with the heaviest consumption in Chiriquí, which accounts for a fourth of the total number of 334,000 (table 4). In June 1942 the Province of Los Santos had the most poultry - 246,000 birds - but Chiriquí and Veraguas followed closely.

Export Crops

Bananas and cacao are Panama's principal exports. Together they accounted for from 85 to 95 percent of the total export value from 1938 through 1942 (table 5).

Banana production for domestic use is possible in most of Panama, but all commercial plantings are in the districts of Barú and Bugaba in the Province of Chiriquí. From 1928, when commercial plantings of bananas first started, until the present war Panamanian bananas were exported to the United States and Europe. The war has stopped all shipments to Europe, and lack of shipping space has curtailed exports to the United States. Only about 11,000 acres of banana land are now kept in good condition by fertilization, spraying, and irrigation, but an additional 10,000 acres are pruned and kept free of weeds.

Cacao, the second most important export in terms of value, is grown in the Bocas del Toro region in northwest Panama. Exports declined steadily from 1939 through 1942, but during the first 5 months of 1943 cacao exports totaled 2,781,000 pounds as against only 1,058,000 pounds during the same period of 1942.

TABLE 3.-Imports of selected foods into Panama, 1939, 1941, and 1942

ITEM ¹	GROSS OR NET WEIGHT	1939 ²				1941		1942	
		QUANTITY			TOTAL VALUE	QUANTITY	VALUE	QUANTITY	VALUE
		FROM UNITED STATES	FROM OTHER SPECIFIED COUNTRIES	TOTAL					
		1,000 pounds	1,000 pounds	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars
Conserved									
meat . . .	G	1,115	227 (Poland)	1,495	249	1,092	292	1,703	665
Wheat flour.	G	20,451	— —	21,948	367	23,624	466	28,936	659
Milk, evapo- rated and condensed.	G	62	4,139 (Netherlands)	4,231	144	1,358	100	5,486	420
Butter . . .	G	669	1,217 (New Zealand)	2,133	443	1,985	396	1,832	408
Rice	G	61	6,472 (China)	7,509	131	8,621	254	7,102	385
Malt	G	1,206	3,650 (Germany)	5,302	171	9,589	336	7,635	299
Milk, powdered .	G	344	93 (New Zealand)	492	71	815	146	1,244	276
Lard	G	1,786	2 (Netherlands)	1,790	131	2,132	192	2,204	253
Meat ³	G	2,148	124 (Argentina)	2,430	372	843	138	1,405	253
Biscuits . .	G	284	52 (England)	390	63	1,159	169	1,441	248
Sugar	G	175	245 (England)	⁴ 710	16	6,691	208	6,762	244
Eggs		⁵ 466	— —	⁵ 469	118	⁵ 224	69	⁵ 520	209
Fish ⁶	N	1,664	231 (Canada)	2,341	145	2,225	229	1,490	185
Potatoes . .	G	3,547	— —	3,548	46	2,305	35	5,209	152
Vegetable oils	N	⁷ 148	1,108 (England)	⁷ 1,716	93	1,812	158	887	144
Dried vegetables	G	⁸ 286	900 (Chile)	⁸ 1,289	44	2,245	98	2,857	143
Cheese	G	238	25 (Netherlands)	314	49	356	71	569	129
Oats	G	575	77 (Canada)	680	40	2,254	80	2,665	116
Onions	N	2,339	383 (Egypt)	2,826	38	3,073	77	3,298	113
Sirups	N	362	— —	362	41	989	92	1,194	105
Apples	G	1,086	52 (Chile)	1,138	33	2,133	69	1,553	77
Vegetable lard	G	233	138 (England)	447	27	474	39	541	64
Grapes	G	608	77 (Chile)	686	27	857	35	810	55
Canned peas.	N	384	— —	396	24	509	37	531	52
Pears	G	530	22 (Chile)	552	19	719	29	547	37
Peanuts . . .	G	27	355 (China)	444	16	515	32	238	36
Total, these items.					2,918		3,847		5,727
Total food .					3,694		4,957		7,347
Percent of total					79		78		78

¹ Listed in order of value in 1942. ² Normal pre-war year. ³ Fresh, frozen, and chilled.⁴ White sugar only. ⁵ 1,000 dozen. ⁶ Sardines, salmon, and codfish. ⁷ Soybean oil only.⁸ Frijoles (beans) only.

COMERCIO EXTERIOR, 1939; ESTADISTICA PANAMAÑA, December 1942.

TABLE 4.-Cattle, hog, and poultry numbers in Panama, by Provinces, June 1942

PROVINCE	CATTLE	HOGS	POULTRY	PROVINCE	CATTLE	HOGS	POULTRY
	<i>Thou-</i> <i>sands</i>	<i>Thou-</i> <i>sands</i>	<i>Thou-</i> <i>sands</i>		<i>Thou-</i> <i>sands</i>	<i>Thou-</i> <i>sands</i>	<i>Thou-</i> <i>sands</i>
Bocas del Toro .	1	1	6	Herrera	50	22	167
Coclé	44	15	133	Los Santos . . .	59	33	246
Colón	4	2	15	Panamá	26	8	105
Chiriquí	85	23	203	Veraguas	64	31	195
Darién	1	3	14	Total	334	138	1,084

CENSO AGRO-PECUARIO, 1942. Ministerio de Agricultura y Comercio, Panama, 1943.

Other important agricultural exports are coconuts, cattle hides, and cattle in some years. The war program has stimulated interest in supplies of rubber and abacá in Panama, and exports are expected to increase. Already abacá exports have expanded. After declining from 143,000 pounds in 1940 to 23,000 pounds in 1941, they jumped up in 1942 to 619,000 pounds.

THE GOVERNMENT'S PROGRAM FOR INCREASED PRODUCTION

During the past 2 years, the Government of Panama has followed a program inaugurated to improve the agriculture of the country, in order to overcome the food deficiency and to establish a better economic balance. Some parts of this program were designed to stimulate production directly; others, regulatory in nature, are directed toward the protection of producers and consumers. One of the first positive steps taken under this program to stimulate production was the enactment of the Family Heritage Law (Law No. 22) of March 20, 1941. This law provides for the head of a family unit a homestead, consisting of a house and a maximum of 10 hectares (2½ acres) of land valued at not more than \$1,000. The family must live on the land and by the end of the first 4 years of settlement must cultivate or raise stock on at least half of it for the common use of all members of the family. The land cannot be sold, mortgaged, or attached, and the homestead is exempt from national, provincial, and local taxes.

One of the most important results of the government program was the establishment in mid-1941 of the Banco Agro-Pecuario e Industrial (Law 17, Title 3), a subsidiary of the Banco Nacional. This provides funds for developing agriculture and stock raising. It also controls and finances certain phases of industry. These operations cover both objectives of the new program - direct aid to agriculture and regulation of prices and imports. The Bank is authorized among other things to:

(1) Import articles of prime necessity, which will be placed on sale in sections in such a manner that they may be acquired wholesale by merchants for retailing to

TABLE 5.-Bananas and cacao exports from Panama, quantity and value, 1938-42

YEAR	BANANAS		CACAO	
	QUANTITY	VALUE	QUANTITY	VALUE
	<i>1,000</i> <i>stems</i>	<i>1,000</i> <i>dollars</i>	<i>1,000</i> <i>pounds</i>	<i>1,000</i> <i>dollars</i>
1938	6,400	2,755	8,909	442
1939	5,414	2,430	11,601	601
1940	5,865	3,085	9,819	578
1941	5,669	3,654	6,542	400
1942	2,369	1,813	4,309	256

COMERCIO EXTERIOR, 1939; ESTADISTICA PANAMAÑA, February and December 1942.

consumers. It will be a condition that the buyer does not resell the products at a price higher than that fixed by the Commission for the Control of Prices.

(2) Buy natural products of prime necessity for resale both in the capital and in other cities and towns of the Republic. These operations will be carried out by the agencies of the Bank.

(3) Install mills for rice, coffee, corn, and similar products, which will be operated for the benefit of the farmer and the consumer.

(4) Take the necessary measures to prevent unjust increases in prices of all articles of first necessity.

The Bank has cooperated in encouraging increased cultivation through the extension of loans and control over production and imports. When the new administration came into power in 1941, steps were taken to dissolve certain national monopolies and to repeal some provisions of laws passed by the previous administration. The Bank, however, retained its supervisory control over prices as well as a place in the new administration's agricultural program.

Still another part of this program centered around a series of decrees and new regulations issued to modernize agricultural practices. Executive Decree No. 47, dated December 10, 1941, provided for the establishment of a Food Commission to determine the quantity of articles of prime necessity present in the Republic and the usual origin and consumption of these products. This was followed on December 19, 1941, by a comprehensive program for agricultural development, under which the Government set aside \$1,000,000 to encourage domestic production. A 30-percent increase in the cultivation of staple crops (rice, corn, garden truck, and tubers) was planned, and a large irrigation project was undertaken in the interior to maintain cultivation during the dry season from January to April. Engineers have surveyed the possibilities of this project, and work is under way. A Cuban agricultural expert has been hired by the Government, and agricultural experts from Peru and elsewhere are also helping to carry on the work.

By decree of January 17, 1942, the Government may, as long as a state of war exists, take over private property suitable for agriculture and issue temporary licenses for its cultivation. Landowners throughout the interior are now voluntarily offering their property for this purpose. Financial and technical assistance, as well as seeds and fertilizer, will be made available to all Panamanians wishing to engage in agriculture.

In order to facilitate the new program, the Government early in 1942 ordered from the United States \$325,000 worth of farm equipment needed for that year. Newly organized farm cooperatives will make the Government-owned machinery available for use to their members. Mechanization of agriculture is necessary to increase harvests, because many laborers have been lost to Canal Zone defense projects.

Reduction of Tariff Duties

This development program was supplemented by a number of regulatory measures. Soon after the new administration came into power in October 1941, an announcement was made to the effect that tariff duties on certain imported foodstuffs would be lowered to allow sufficient imports at reasonable prices. The revised basic tariff law of January 28, 1937, had levied certain specific as well as ad valorem duties designed to develop national industries in Panama. The principal products protected by those duties were sugar, rice, condensed milk, liquors, soap, shoes, hats, ceramic products, and furniture.


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Under the new regulations, the first reduction made was on potatoes, effective December 1, 1941, when the duty was reduced from 10 to 2 cents per kilo (2.2 pounds). This reduction was followed in the first week of February by a decree (under authority of Law 41 of 1941) reducing materially, and in some cases abolishing, import duties on a large number of items, including canned or prepared meats, ham and bacon, milk, eggs, butter, cheese, fish, fresh vegetables, beans, meat extracts, soup concentrates, and fruit juices.

### Price Control

A Price Control Commission or Board, established in 1941, supplemented domestic food production through purchases of sugar, rice, and potatoes and the pegging of retail prices. It moved in January 1942 to control in a more positive manner wholesale and retail prices of many items. The first schedule under the new policy affected only potatoes and rice, but later regulation was extended to other commodities. These price regulations did not provide effective enforcement measures, and a new Price Control Commission was established by decree in August with authority to implement price regulations. Later (in September) another decree created an inspection service to prevent hoarding of native food products by middlemen, and on October 1, the hoarding of locally produced food in any manner was prohibited. The retail price index of controlled foodstuffs showed a decline from 100 in August 1942 to 98.2 in June 1943, whereas the index of uncontrolled food prices rose from 100 to 124.5 during the same period.

The latest price-control efforts have been made by the Government's new Office of Import, Price, and Food Control. This agency placed ceiling prices on coffee, vegetable lard, canned soup, and pork lard. The ceiling prices represented a reduction of 5 cents a pound on each item, except canned soup.

### Other Plans

Other aids to agriculture contemplated by the Government include the construction of tick baths, hog-cholera vaccination, development of model dairies, and construction of granaries, warehouses, silos, and refrigerators for storing and conserving the products of agriculture.

### TRANSPORTATION AND MARKETING FACILITIES

The success of the Government's program to produce a well-rounded economy by increasing agricultural production is affected to a certain extent by transportation and marketing facilities within Panama. Although Panama has three railroads, the total mileage is less than 300. The principal line, the Panama Railroad, runs across the Isthmus from Colón to Panamá City. The country is largely dependent upon motor-vehicle transportation for the movement of both freight and passenger traffic from the interior to the cities. With only a small amount of coastwise shipping, farm products must be moved from the interior to urban centers largely by truck. Farmers bring their produce into the small towns, where middlemen buy it and transport it by truck to the larger cities. The Government has made efforts recently to obtain the services of small vessels for increased coastal shipping, and it is repairing old roads and helping to build new ones from the interior to the coastal shipping points. The movement of crops, however, is seriously threatened by the scarcity of gasoline and rubber. Both these commodities are now under rationing in the Republic of Panama and in the Canal Zone.

## RESULTS OF PROGRAM

The results of the agricultural-expansion program are already promising in spite of the severe shortage of labor, lack of farm and irrigation machinery, and inadequate transportation facilities. Farmers have responded to the plea for larger crops by preparing increased acreages. The information work of the National Institute of Agriculture in conducting demonstrations and organizing short courses in improved farm practices is giving an increasing number of farmers a better knowledge of the operations of agricultural machinery, the application of fertilizers, insecticides, and fungicides, and the advantages of proper irrigation. Lack of shipping space for moving the banana crop furnished the incentive for many farmers to convert banana land to the production of rice, corn, alligator pears, citrus fruit, and papayas for domestic subsistence.

By September 1942 the Government had distributed approximately 130,000 acres of land to farmers, and increased harvests of rice, corn, potatoes, and beans were obtained (table 6).

TABLE 6.—*Production of selected foods in Panama, 1941 and 1942*

| FOOD          | UNIT          | PRODUCTION |         | FOOD          | UNIT         | PRODUCTION |        |
|---------------|---------------|------------|---------|---------------|--------------|------------|--------|
|               |               | 1941       | 1942    |               |              | 1941       | 1942   |
| Rice (milled) | 1,000 pounds  | 59,514     | 84,957  | Sugar (white) | Short tons   | 3,965      | 4,078  |
| Corn . . . .  | 1,000 bushels | 992        | 1,408   | Beans . . . . | 1,000 pounds | 4,638      | 6,393  |
| Yuca . . . .  | 1,000 pounds  | 81,943     | 120,043 | Potatoes . .  | Bushels      | 17,514     | 29,600 |

ESTADISTICA PANAMAÑA, various issues.

Optimism over the prospective rice crop was so high last year that the Government on October 8, 1942, prohibited (Decree Law No. 40) the importation of rice in order to protect native farmers who were increasing production. Poultry production is now being stimulated by the importation of baby chicks by the Government for sale to poultry raisers at cost.

Except in the case of rice, however, the increase in food production probably will not result in any appreciable decrease in imported food requirements until after 1943. Farmers are becoming more aware of the advantages of greater domestic food production, and by 1944 expanded acreages, improved methods, government loans, and guaranteed prices for staple crops are expected to show marked effects upon domestic food supplies in the Republic.